

The finality of the office action mailed 7.14.08 is withdrawn as stated in the interview summary record mailed 12/16/08.

Claims 33,34 and 38 (and 43 and 44 due to dependency on claim 38) are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 33, the use of “primarily” is subjective, having connotations related to importance, and therefor fails to limit the plasma to a particular range of He concentration. In claim 34, “comprised of only He” is contradictory. For the purposes of this office action the claim is seen to require that “the plasma consists of He”. In claim 38, “the impurities is a boron” is not understood. For the purposes of this office action the claim is seen to require that “the impurity is boron”.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 31-33,38,45 and 46 are rejected under 35 U.S.C. 102(a) as being anticipated by Maydan et al 2004/0166612.

Maydan et al '612 discloses plasma doping an SOI structure [0263] including co-implantation with helium [0293] wherein amorphization of the wafer surface occurs [0265]. The doping is followed by RTA which includes lamp heating or laser annealing [0322].

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maydan et al 2004/0166612 as applied to claims 31-33,38,45 and 46 above, and further in view of Yang 6653699.

Although Maydan et al '612 discloses plasma amorphization using Xe or Ar prior to plasma doping the reference does not disclose a plasma consisting of He for this purpose.

Yang discloses amorphization of silicon using a plasma of an inert element such as Ar, Xe or He.

It would have been obvious to one of ordinary skill in the art to combine the teachings of Maydan '612 with those of Yang to enable performing the disclosed amorphization step of Maydan '612 according to the teachings of Yang because in such a process the method of Yang would be used according to its disclosed intended purpose and would therefor have reasonably been expected by one of ordinary skill in the art to yield the predictable results of forming the disclosed amorphized region of Maydan '612.

Claims 36,37,39-41,43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maydan '612 as applied to claims 31-33,38,45 and 46 above, and further in view of Downey et al 2004/0235281.

Maydan '612 does not disclose use of Xe lamp in the annealing step.

Downey et al '281 discloses plasma doping with preamorphization [0032] followed by activation annealing using Xe lamp having a substantial portion of it's output in the 200-1100 nm range.

It would have been obvious to one of ordinary skill in the art to combine the teachings of Maydan et al '612 and Yang to enable performing the disclosed lamp annealing step of Maydan et al '612 according to the teachings of Yang because in such a process the method of Yang would be used according to it's disclosed intended purpose and would therefor have reasonably been expected by one of ordinary skill in the art to yield the predictable results of performing the disclosed lamp annealing step of Maydan et al. The resulting semiconductor would have the recited properties because the same materials are treated as in the instant invention.

Claims 42,47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maydan '612 as applied to claims 31-33,38,45 and 46 above, and further in view of the following arguments.

The examiner takes official notice that use of silicon substrates having a (100) crystal orientation, strained Si substrates and glass substrates as SOI structures as recited was known prior to applicant's invention.

Art Unit: 2823

It would have been obvious to one of ordinary skill in the art to combine the known processes according to their known intended purposes with the process of Maydan '612 to enable providing the disclosed SOI substrate of Maydan '612 because in the process of the combination the known process would be employed according to their known intended purposes and would therefor reasonably have been expected to provide the predictable results of the disclosed substrate formation step of Maydan '612.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Fourson whose telephone number is (571) 272-1860. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith, can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/George Fourson/
Primary Examiner, Art Unit 2823

GFourson
May 28, 2009